

What Is Claimed Is:

1. Apparatus for locally perfusing one or more kidneys comprising:

a catheter having an inlet end, an outlet end, and a lumen, the inlet end configured for placement in a source of arterial blood, the outlet end having at least a first conduit configured for insertion into a first renal artery; and

means for engaging the first conduit within the first renal artery.

2. The apparatus of claim 1 wherein the inlet end is configured for placement in a patient's left ventricle.

3. The apparatus of claim 1 wherein the outlet end further comprises a second conduit configured for placement in a second renal artery.

4. The apparatus of claim 1 further comprising a drug infusion device.

5. The apparatus of claim 1 further comprising a blood pump.

6. The apparatus of claim 1 further comprising a one-way valve that permits blood to flow only from the inlet end to the outlet end.

7. The apparatus of claim 1 wherein the means for engaging comprises an occluder formed from a self-expanding water-swellable material.

8. The apparatus of claim 1 wherein the means for engaging comprises an inflatable member.

9. The apparatus of claim 1 wherein the means for engaging comprises a plurality of ribs or barbs disposed on an exterior surface of the first conduit.

10. The apparatus of claim 1 further comprising a radio-opaque marker band disposed on the first conduit.

11. Apparatus for use in treating congestive heart failure comprising:

a flexible catheter having an inlet end, an outlet end, and a lumen, the inlet end configured for insertion into a source of arterial blood, the outlet end including a first conduit configured for insertion into a patient's renal artery; and

means for engaging an interior surface of a renal artery disposed on the first conduit to retain the first conduit in the patient's renal artery.

12. The apparatus of claim 11 further comprising a drug infusion device.

13. The apparatus of claim 11 further comprising a blood pump.

14. The apparatus of claim 11 further comprising a one-way valve that permits blood to flow only from the inlet end to the outlet end.

15. The apparatus of claim 11 wherein the means for engaging comprises a self-expanding water-swellable material.

16. The apparatus of claim 11 wherein the means for engaging comprises an inflatable member.

17. The apparatus of claim 11 further comprising a radio-opaque marker band disposed on the first conduit.

18. A method of locally perfusing one or more kidneys comprising:

providing a flexible catheter having an inlet end, a lumen, and an outlet end including a first conduit;

advancing the catheter percutaneously and transluminally along a guidewire to dispose the inlet end in a source of arterial blood;

inserting the first conduit into a patient's renal artery; and

engaging the first conduit within the patient's renal artery.

19. The method of claim 18 wherein providing a catheter comprises providing a catheter including a drug infusion device, the method further comprising:

periodically activating the drug infusion device to infuse a drug into blood flowing through the lumen.

20. The method of claim 18 wherein providing a catheter comprises providing a catheter including a blood pump, the method further comprising:

actuating the blood pump to increase a rate of blood flow through the lumen.